

## CLAIMS

We claim:

1. A recombinant human interferon alpha isoform comprising at least one N-glycosylation motif with the sequence Asn-Xaa-Ser/Thr wherein the asparagine of the motif is N-linked to acetylglucosamine and the motif is in a non-helical region of the protein.
2. A pharmaceutical composition comprising the recombinant human interferon alpha isoform according to claim 1 and a pharmaceutically acceptable carrier.
3. An isolated nucleic acid encoding the recombinant human interferon alpha isoform of claim 1.
4. The isolated nucleic acid according to claim 3, wherein the encoded recombinant human interferon alpha isoform comprises the amino acid sequence of SEQ ID NO:1 modified to contain at least one N-glycosylation motif with the sequence Asn-Xaa-Ser/Thr such that the asparagine residue of the motif occurs at a site selected from the group consisting of Cys1, Asp2, Pro4, Gln5, Thr6, His7, Ser8, Arg22, Arg23, Ile24, Ser25, Leu26, Phe27, Ser28, Cys29, Leu30, Lys31, Asp32, Arg33, His34, Asp35, Phe36, Gly37, Pro39, Gln40, Glu41, Glu42, Phe43, Gly44, Asn45, Gln46, Phe47, Gln48, Lys49, Ala50, Glu51, Thr52, Ser68, Asp77, Lys134, Tyr135, Ser136, Gln158, Glu159, Ser160, Leu161, Arg162, Ser163, Lys164, and Glu165.
5. An expression vector comprising the nucleic acid of claim 3.
6. A recombinant human interferon alpha isoform comprising the amino acid sequence of SEQ ID NO:1 modified to contain at least one N-glycosylation motif with the

sequence Asn-Xaa-Ser/Thr such that the asparagine residue of the motif occurs at a site selected from the group consisting of Cys1, Asp2, Pro4, Gln5, Thr6, His7, Ser8, Arg22, Arg23, Ile24, Ser25, Leu26, Phe27, Ser28, Cys29, Leu30, Lys31, Asp32, Arg33, His34, Asp35, Phe36, Gly37, Pro39, Gln40, Glu41, Glu42, Phe43, Gly44, Asn45, Gln46, Phe47, Gln48, Lys49, Ala50, Glu51, Thr52, Ser68, Asp77, Lys134, Tyr135, Ser136, Gln158, Glu159, Ser160, Leu161, Arg162, Ser163, Lys164, and Glu165.

7. The recombinant human interferon alpha isoform according to claim 6, wherein the asparagine residue of the motif occurs at a site selected from the group consisting of Leu26, His34, and Lys134.

8. The recombinant human interferon alpha isoform according to claim 7, wherein the asparagine residue of the motif occurs at His34 and Phe36 is serine.

9. The recombinant human interferon alpha isoform according to claim 7 further comprising a second N-glycosylation motif wherein the asparagine residue of the second motif occurs at a non-redundant site selected from the group consisting of Leu26, His34, and Lys134.

10. A method for producing an N-glycosylated human interferon alpha isoform comprising:

culturing a eukaryotic host cell transformed or transfected with the expression vector of claim 8 under conditions that permit expression of the encoded recombinant human interferon alpha isoform; and

isolating the expressed recombinant human interferon alpha isoform from the culture.